## REMARKS

This Application has been carefully reviewed in light of the Office Action mailed November 6, 2002. In order to advance prosecution of this case, Applicants amend Claims 2-9, 11-17, and 19-26. Applicants cancel Claims 1, 10, and 18 without prejudice or disclaimer, and add new Claims 27-48. Applicants respectfully request reconsideration and favorable action in this case.

## Section 112 Rejections

The Examiner objects to the specification for minor informalities specified in paragraph 1 of the Office Action, and suggests appropriate corrections. Applicants have accordingly amended the specification and respectfully request the Examiner to reconsider and withdraw this objection.

The Examiner rejects claims 4, 13, and 21 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicants regard as the invention. In particular, the Examiner rejects the language "exceeding $10^{-5}$ to $10^{-9}$" as it is unclear what value is required to exceed a range. Applicants amend the claims and respectfully request the Examiner to reconsider this rejection and to allow the claims as amended.

## Allowable Subject Matter

Applicants greatly appreciate the Examiner's indication that Claims 3, 6, 12, 14, 20, and 23 would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims (paragraph 7 of the Office Action). Applicants also appreciate the Examiner's indication that claims 4, 13, and 21 would be allowable if

amended to overcome the rejection under the second paragraph of 35 U.S.C. 112 and also amended to include all of the limitations of the base claim and any intervening claims (paragraph 8 of the Office Action). Applicants have amended Claims 3, 4, 6, 12, 13, 14, 20, 21, and 23 accordingly, and therefore request reconsideration and allowance of these amended claims and their dependent claims.

## Section 103 Rejections

The Examiner rejects Claims 1-2, 5, 8-11, 16-19, 22, and 25-26 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,195,090 issued to Bolliger et al. Claims 1, 10, and 18 have been canceled without prejudice or disclaimer and are no longer pending in the application. All other rejected claims have been amended to depend directly or indirectly on claims that are allowable for at least the reasons stated above. For at least these reasons, Applicants respectfully request reconsideration and allowance of all pending claims.

## New Claims

Applicants add new Claims 27-48, which are fully supported by the specification as originally filed. Based on the Examiner's reasons for indicating that subject matter of certain claims is allowable, Applicants respectfully submit that all new claims are allowable.
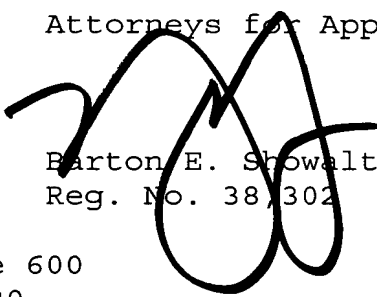
## Conclusions

Applicants have made an earnest attempt to place this case in condition for allowance. For the foregoing reasons, and for other reasons clearly apparent, Applicants respectfully request full allowance of all pending Claims. If the Examiner feels that a telephone conference or an interview would advance prosecution of this Application in any manner, the undersigned attorney for Applicants stands ready to conduct such a conference at the convenience of the Examiner.

A check in the amount of $1,182.00 is attached to cover the fee for additional claims. Applicants believe that no other fees are due, however, the Commissioner is hereby authorized to charge any fees or credit any overpayments to Deposit Account No. 02-0384 of Baker Botts L.L.P.

Respectfully submitted,

BAKER BOTTS L.L.P.
Attorneys for Applicants

Barton E. Showalter
Reg. No. 38,302

2001 Ross Avenue, Suite 600
Dallas, Texas 75201-2980
(214) 953-6509

Date: **2/6/03**

CORRESPONDENCE ADDRESS:
Customer Number or Bar Code Label:

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## Marked-Up Version of Specification and Claim Amendments

For the convenience of the Examiner, all claims have been presented whether or not an amendment has been made. The specification and claims have been amended as follows.

IN THE SPECIFICATION

Please amend the specification as follows.

At page 4, lines 2-12, please delete:

[According to the invention, SONET UPSR protection is effected by configuring a TDM switch to route TDM traffic from two receive circuits to the same destination. Based on UPSR traffic qualification, one copy of this traffic is discarded in the TDM switch so that only a single copy is passed to the TDM switch. Based upon received performance measurements, the circuit performing the discard operation can change. The same or similar mechanism can be used to protect against equipment failure and accommodate removal of one of the receive circuits.]

and insert therefore:

According to the invention, SONET UPSR protection is effected by configuring a TDM switch to route TDM traffic from two receive circuits to the same destination. Based on UPSR traffic qualification, one copy of this traffic is discarded in the TDM switch so that only a single copy is passed through the TDM switch. Based upon received performance measurements, the circuit performing the discard operation can change. The same or similar mechanism can be used to protect against equipment failure and accommodate removal of one of the receive circuits.

At page 7, lines 2-10, please delete:

[FIGURE 1 is a block diagram of a TDM communication network 10 according to the invention. The nodes 12, 14, 16 and 18 may each include TDM switches as described below. Signal source 13 routes its traffic into node 12 which directs duplicate signals to node 18 via two paths, one though node 14 and node 16 and the other to node 18. Node 18 receives both signals, selects the best or preferred signal, and routes the selected signal to a destination 19.]

and insert therefore:

FIGURE 1 is a block diagram of a TDM communication network 10 according to the invention. The nodes 12, 14, 16 and 18 may each include TDM switches as described below. Signal source 13 routes its traffic into node 12 which directs duplicate signals to node 18 via two paths, one through node 14 and node 16 and the other to node 18. Node 18 receives both signals, selects the best or preferred signal, and routes the selected signal to a destination 19.

IN THE CLAIMS

Please amend the claims as follows.

Please cancel Claim 1 without prejudice or disclaimer.

2.     (Amended) The method of Claim **3** [1], wherein determining comprises receiving management traffic on a path indicating a degradation or loss of signal on the path.

3.    (Amended)  <u>In a TDM network having a plurality of
switchable paths to a common destination, a method comprising:</u>
<u>receiving TDM traffic from a traffic source as a
plurality of copies of traffic routed along a plurality of
paths, each one of said paths having a receive circuit;</u>
<u>configuring a TDM switch to provide a route to a common
destination for each one of the paths;</u>
<u>determining a qualified copy of the traffic; and</u>
<u>discarding all copies of the traffic except for the
qualified copy such that only the qualified copy is passed to
the TDM switch for routing to the common destination</u> [The
method of Claim 1], wherein determining comprises detecting a
loss of a keep-alive signal at one of the respective receive
circuits.

4.　　(Amended)　<u>In a TDM network having a plurality of switchable paths to a common destination, a method comprising:</u>

<u>receiving TDM traffic from a traffic source as a plurality of copies of traffic routed along a plurality of paths, each one of said paths having a receive circuit;</u>

<u>configuring a TDM switch to provide a route to a common destination for each one of the paths;</u>

<u>determining a qualified copy of the traffic; and</u>

<u>discarding all copies of the traffic except for the qualified copy such that only the qualified copy is passed to the TDM switch for routing to the common destination</u> [The method of Claim 1], wherein determining is based upon the following criteria:

alarm indication signal (AIS),

loss of pointer (LOP), or

missing terminating circuit card; thereafter

bit error rate (BER) exceeding **approximately** $10^{-3}$ in the path; thereafter

signal degradation (SD) resulting from a BER exceeding [10-5 to] **approximately** $10^{-9}$.

5.　　**(Amended)**　The method of Claim **3** [1], wherein discarding comprises setting a kill-bit to indicate whether the traffic should be switched through or discarded.

6. **(Amended)** <u>In a TDM network having a plurality of switchable paths to a common destination, a method comprising:</u>

<u>receiving TDM traffic from a traffic source as a plurality of copies of traffic routed along a plurality of paths, each one of said paths having a receive circuit;</u>

<u>configuring a TDM switch to provide a route to a common destination for each one of the paths;</u>

<u>determining a qualified copy of the traffic; and</u>

<u>discarding all copies of the traffic except for the qualified copy such that only the qualified copy is passed to the TDM switch for routing to the common destination</u> [The **method of Claim 1]**, wherein determining comprises communicating information related to qualifying between the respective receive circuits.

7. **(Amended)** The method of Claim **3** [1], wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

8. **(Amended)** The method of Claim **3** [1], wherein the TDM traffic is carried in VT or STS-1 formats within a transmission signal.

9. **(Amended)** The method of Claim **3** [1], wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

Please cancel Claim 10 without prejudice or disclaimer.


11.  **(Amended)** The apparatus of Claim **12** [10], wherein each receive circuit is operable to qualify TDM traffic by receiving management traffic on a path indicating a degradation or loss of signal on the path.

12. (Amended) <u>In a TDM network having a plurality of paths to a destination, an apparatus comprising:</u>

<u>a plurality of receive circuits coupled to monitor signals on respective paths to a TDM switch, each receive circuit operable to set a kill-bit to accompany TDM traffic sent to the TDM switch to indicate whether the TDM traffic should be switched or discarded;</u>

<u>a memory coupled to the receive circuits and operable to receive the TDM traffic with accompanying kill-bits, the memory operable to store the TDM traffic having an accompanying kill-bit that has not been set, the memory further operable to discard the TDM traffic having an accompanying kill-bit that has been set; and</u>

<u>a communication path between the receive circuits and operable to convey qualifying information for the paths</u> [The apparatus of Claim 10], wherein each receive circuit is operable to qualify TDM traffic by detecting a loss of a keep-alive signal of another receive circuit.

13.    (Amended) <u>In a TDM network having a plurality of paths to a destination, an apparatus comprising:</u>

<u>a plurality of receive circuits coupled to monitor signals on respective paths to a TDM switch, each receive circuit operable to set a kill-bit to accompany TDM traffic sent to the TDM switch to indicate whether the TDM traffic should be switched or discarded;</u>

<u>a memory coupled to the receive circuits and operable to receive the TDM traffic with accompanying kill-bits, the memory operable to store the TDM traffic having an accompanying kill-bit that has not been set, the memory further operable to discard the TDM traffic having an accompanying kill-bit that has been set; and</u>

<u>a communication path between the receive circuits and operable to convey qualifying information for the paths</u> [The **apparatus of Claim 10**], wherein each receive circuit qualifies the TDM traffic based upon the following criteria:

alarm indication signal (AIS);

loss of pointer (LOP), or

missing terminating circuit card; thereafter

bit error rate (BER) exceeding **approximately** $10^{-3}$ in the path; thereafter

signal degradation (SD) resulting from a BER exceeding [10-5 to] **approximately** $10^{-9}$.

14. (Amended) In a TDM network having a plurality of paths to a destination, an apparatus comprising:

a plurality of receive circuits coupled to monitor signals on respective paths to a TDM switch, each receive circuit operable to set a kill-bit to accompany TDM traffic sent to the TDM switch to indicate whether the TDM traffic should be switched or discarded;

a memory coupled to the receive circuits and operable to receive the TDM traffic with accompanying kill-bits, the memory operable to store the TDM traffic having an accompanying kill-bit that has not been set, the memory further operable to discard the TDM traffic having an accompanying kill-bit that has been set; and

a communication path between the receive circuits and operable to convey qualifying information for the paths [The apparatus of Claim 10], wherein each receive circuit is further operable to:

receive TDM traffic associated with a virtual tributary (VT);

determine if the TDM traffic is pass-through based on the VT; and

if the TDM traffic is not pass-through, set an accompanying kill-bit if the receive circuit is stand-by for the particular VT.

15. (Amended) The apparatus of Claim **12** [10], wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

16.   **(Amended)** The apparatus of Claim **12** [10], wherein the TDM traffic is carried in VT or STS-1 formats within a transmission signal.

17.   **(Amended)** The apparatus of Claim **12** [10], wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each receive circuit to the destination.

Please cancel Claim 18 without prejudice or disclaimer.

19.   **(Amended)** The program of Claim **20** [18], wherein determining comprises receiving management traffic at the receive circuit indicating a degradation or loss of signal on a corresponding path.

20.    (Amended)  **A program embodied in computer-readable media and operable to perform the following steps:**

**receiving, at a receive circuit, TDM traffic from a traffic source as one of a plurality of copies of traffic routed along a plurality of paths;**

**determining, at the receive circuit, whether the received copy is a qualified copy of the traffic;**

**discarding the received copy if the received copy is not the qualified copy; and**

**communicating the received copy from the receive circuit to a TDM switch for routing to a destination if the received copy is the qualified copy** [The program of Claim 18], wherein determining comprises detecting a loss of a keep-alive signal.

21.    (Amended)  **A program embodied in computer-readable
media and operable to perform the following steps:**

**receiving, at a receive circuit, TDM traffic from a
traffic source as one of a plurality of copies of traffic
routed along a plurality of paths;**

**determining, at the receive circuit, whether the received
copy is a qualified copy of the traffic;**

**discarding the received copy if the received copy is not
the qualified copy; and**

**communicating the received copy from the receive circuit
to a TDM switch for routing to a destination if the received
copy is the qualified copy** [The program of Claim 18], wherein
determining is based upon the following criteria:

alarm indication signal (AIS),

loss of pointer (LOP), or

missing terminating circuit card; thereafter

bit error rate (BER) exceeding **approximately** $10^{-3}$ in the
path; thereafter

signal degradation (SD) resulting from a BER exceeding
[10-5 to] **approximately** $10^{-9}$.


22.    **(Amended)** The program of Claim **20** [18], wherein
discarding comprises setting a kill-bit to indicate whether
the traffic should be switched through or discarded.

23. **(Amended)** <u>A program embodied in computer-readable media and operable to perform the following steps:</u>

<u>receiving, at a receive circuit, TDM traffic from a traffic source as one of a plurality of copies of traffic routed along a plurality of paths;</u>

<u>determining, at the receive circuit, whether the received copy is a qualified copy of the traffic;</u>

<u>discarding the received copy if the received copy is not the qualified copy; and</u>

<u>communicating the received copy from the receive circuit to a TDM switch for routing to a destination if the received copy is the qualified copy</u> [**The program of Claim** 18], wherein determining comprises communicating information related to qualifying to another receive circuit.

24. **(Amended)** The program of Claim **20** [**18**], wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

25. **(Amended)** The program of Claim **20** [**18**], wherein the TDM traffic is carried in VT or STS-1 formats within a transmission signal.

26. **(Amended)** The program of Claim **20** [**18**], wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each of the paths to the destination.

## New Claims

Please add the following new claims.


27.    (New) In a TDM network having a plurality of switchable paths to a common destination, a method comprising:

receiving TDM traffic from a traffic source as a plurality of copies of traffic routed along a plurality of paths, each one of said paths having a receive circuit;

configuring a TDM switch to provide a route to a common destination for each one of the paths;

determining a qualified copy of the traffic; and

discarding all copies of the traffic except for the qualified copy such that only the qualified copy is passed to the TDM switch for routing to the common destination, wherein each receive circuit is operable to:

receive TDM traffic associated with a virtual tributary (VT);

determine if the TDM traffic is pass-through based on the VT; and

if the TDM traffic is not pass-through, set an accompanying kill-bit if the receive circuit is stand-by for the particular VT.

28. (New) <u>In a TDM network having a plurality of paths to a destination, an apparatus comprising:</u>

<u>a plurality of receive circuits coupled to monitor signals on respective paths to a TDM switch, each receive circuit operable to set a kill-bit to accompany TDM traffic sent to the TDM switch to indicate whether the TDM traffic should be switched or discarded;</u>

<u>a memory coupled to the receive circuits and operable to receive the TDM traffic with accompanying kill-bits, the memory operable to store the TDM traffic having an accompanying kill-bit that has not been set, the memory further operable to discard the TDM traffic having an accompanying kill-bit that has been set; and</u>

<u>a communication path between the receive circuits and operable to convey qualifying information for the paths, wherein the receive circuit is further operable to determine whether to set the kill-bit based on the qualifying information.</u>

29. (New) A program embodied in computer-readable media and operable to perform the following steps:

receiving, at a receive circuit, TDM traffic from a traffic source as one of a plurality of copies of traffic routed along a plurality of paths;

determining, at the receive circuit, whether the received copy is a qualified copy of the traffic;

discarding the received copy if the received copy is not the qualified copy; and

communicating the received copy from the receive circuit to a TDM switch for routing to a destination if the received copy is the qualified copy, wherein the receive circuit is one of a plurality of receive circuits, each receive circuit associated with a particular one of the paths, and each receive circuit operable to:

receive TDM traffic associated with a virtual tributary (VT);

determine if the TDM traffic is pass-through based on the VT; and

if the TDM traffic is not pass-through, set an accompanying kill-bit if the receive circuit is stand-by for the particular VT.

30. (New) The method of Claim 4, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

31. (New) The method of Claim 4, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

32. (New) <u>The method of Claim 6, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.</u>

33. (New) <u>The method of Claim 6, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.</u>

34. (New) <u>The method of Claim 27, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.</u>

35. (New) <u>The method of Claim 27, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.</u>

36. (New) <u>The apparatus of Claim 13, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.</u>

37. (New) <u>The apparatus of Claim 13, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.</u>

38. (New) <u>The apparatus of Claim 14, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.</u>

39.  (New)   The apparatus of Claim 14, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

40.  (New)  The apparatus of Claim 28, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

41.  (New)   The apparatus of Claim 28, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

42.  (New)  The program of Claim 21, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

43.  (New)   The program of Claim 21, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

44.  (New)  The program of Claim 23, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

45.  (New)   The program of Claim 23, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

46. (New) The program of Claim 29, wherein the paths comprise a first path in a first direction around a SONET UPSR and a second path in a second direction around the SONET UPSR.

47. (New) The program of Claim 29, wherein the TDM switch is configured to route TDM traffic for a given virtual tributary (VT) from each respective receive circuit to the common destination.

48.  (New)  In a TDM network having a plurality of switchable paths to a common destination, a system comprising:

means for receiving TDM traffic from a traffic source as a plurality of copies of traffic routed along a plurality of paths, each one of said paths having a receive circuit;

means for configuring a TDM switch to provide a route to a common destination for each one of the paths;

means for determining a qualified copy of the traffic; and

means for discarding all copies of the traffic except for the qualified copy such that only the qualified copy is passed to the TDM switch for routing to the common destination, wherein the means for determining comprises means for detecting a loss of a keep-alive signal at one of the respective receive circuits.